The University of Iowa College of Education

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Introduction to Universal Design and Universal Design for Learning

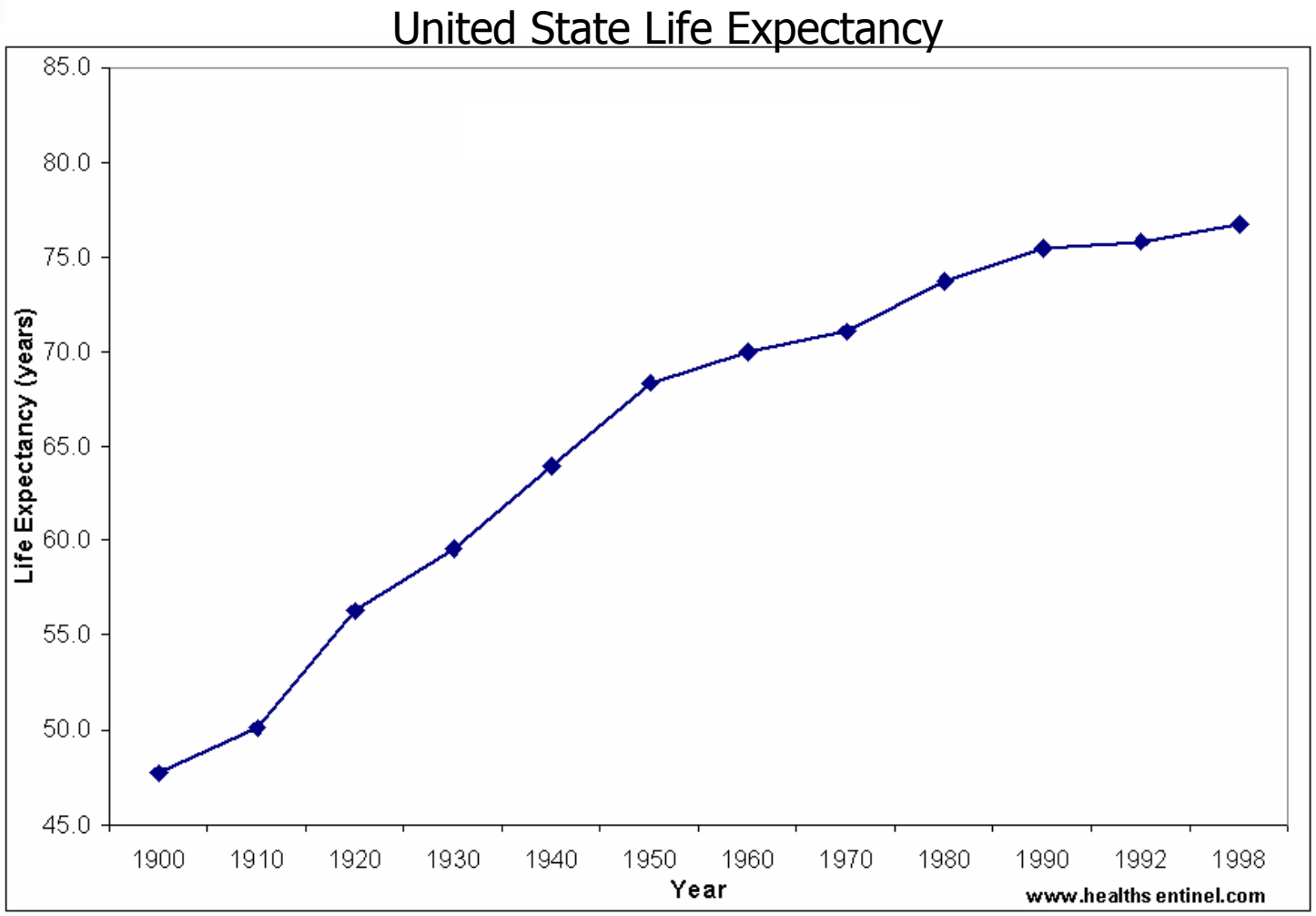
John Achrazoglou

ICATER - Iowa Center for Assistive Technology Education and Research

Objectives

- History of Universal Design
- Principles and examples
- Universal Design for Learning (UDL)
- Demonstration
  - *Kurzweil 3000*
  - *Dragon Naturally Speaking 8*
- Questions – Answers - Discussion

History of Universal Design



History of Universal Design

- 1950's barrier free movement
- 1961 the American Standards Association (The American National Standards Institute, ANSI)

History of Universal Design

- "Disability Rights" Movement of the 1960's
- Architectural Barriers Act of 1968.

History of Universal Design

- The Rehabilitation Act of 1973 Section 504 - reauthorization Section 508
- Technology Related Assistance for Individuals with Disabilities Act of 1988, Amended 1998 (Tech Act)
- Individuals with Disabilities Education Act, or IDEA 1997
- Americans with Disabilities Act, 1990

Definition

Universal design - The design of products and environments to be usable by all people, to the greatest extent possible, without adaptation or specialized design.

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PRINCIPLE ONE
Equitable Use

The design is useful and marketable to people with diverse abilities.

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PRINCIPLE TWO
Flexibility in Use

The design accommodates a wide range of individual preferences and abilities.

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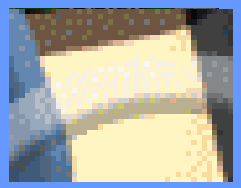
Log On to Windows
Microsoft
Windows xp
Professional
Copyright © 1985-2001
Microsoft Corporation
Microsoft
User name:
Password:
Log on to:
Iowa
Log on using dial-up connection
OK
Cancel
Shut Down...
Options <<



Log On to Windows
Microsoft
Windows xp
Professional
Copyright © 1985-2001
Microsoft Corporation
Microsoft
User name:
achrazog
Password:
Log on to:
Iowa
Log on using dial-up connection
OK
Cancel
Shut Down...
Options <<

Microsoft
Windows
Professional
Internet
Explorer
start

University of Iowa Outlook Web Access - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address https://email.uiowa.edu/exchweb/bin/auth/owalogon.asp?url=https://email.uiowa.edu/exchange&reason=0 Go Links

THE UNIVERSITY OF IOWA

Outlook Web Access

Domain\HawkID: (i.e. IOWA\hhawkeye)

Password:

Don't know your HawkID?
Forgot your password?

Log On

Client (what's this?)

- (•) Premium
- ( ) Basic

Security (what's this?)

- (•) Public or shared computer
- ( ) Private computer

- Anti-Spam Tool

OmniPass - Validate User

User Name: achrazog
Domain: IOWA
Password:
Identity: achrazog

OK
Cancel

Done

start | 3 Internet Ex... | My Pictures | OWA Login Scre... | 9:54 AM

University of Iowa Outlook Web Access - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address https://email.uiowa.edu/exchweb/bin/auth/owalogon.asp?url=https://email.uiowa.edu/exchange&reason=0 Go Links

THE UNIVERSITY OF IOWA

Outlook Web Access

Domain\HawkID: achrazog (i.e. IOWA\hhawkeye)

Password: ●●●●●●●●●

Don't know your HawkID?
Forgot your password?

Log On

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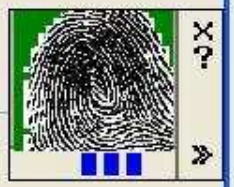

- Anti-Spam Tool

Done

OmniPass - Validate User

User Name: achrazog
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Cancel

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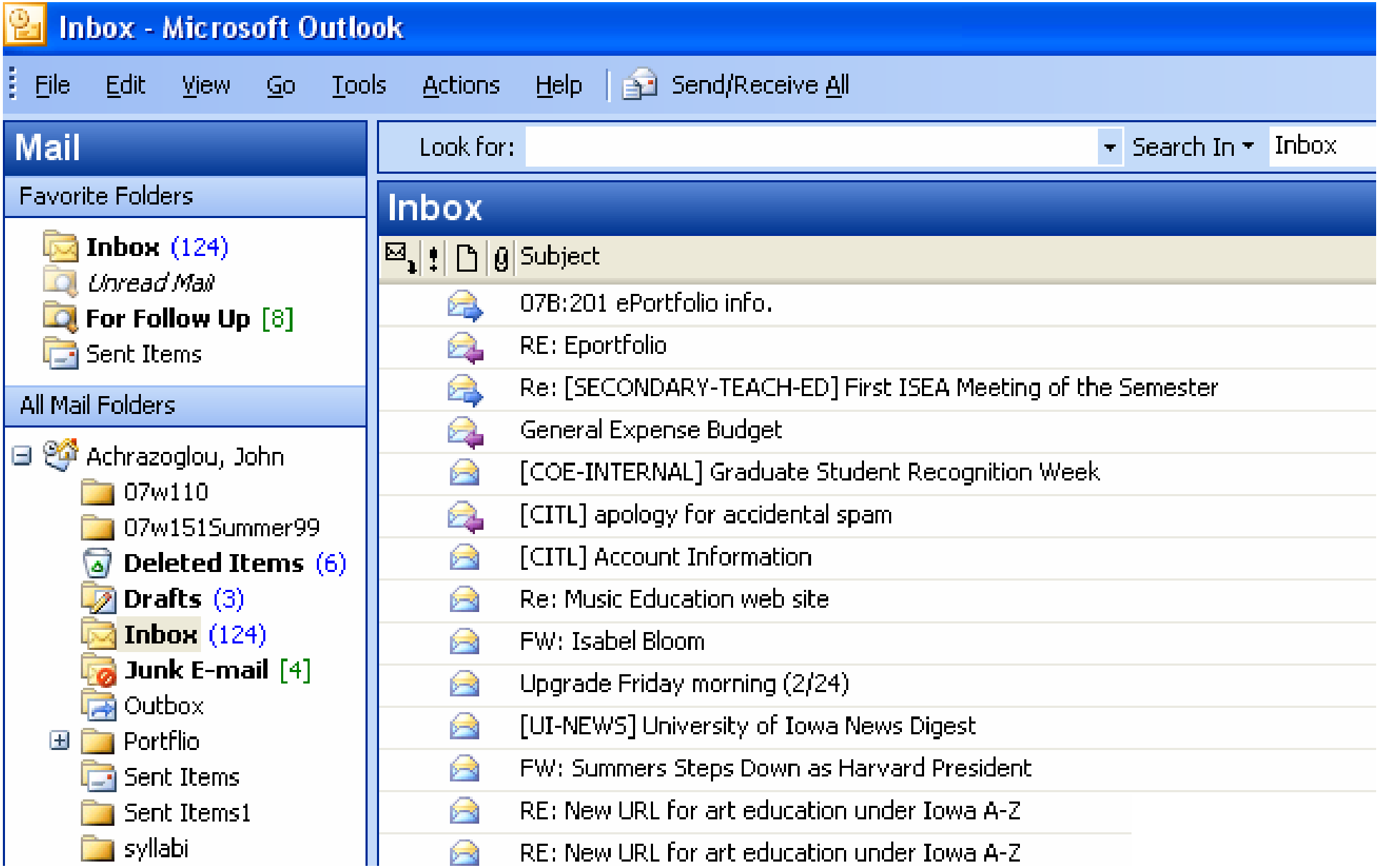
Inbox - Microsoft Outlook
File Edit View Go Tools Actions Help Send/Receive All
Mail
Favorite Folders
Inbox (124)
Unread Mail
For Follow Up [8]
Sent Items
All Mail Folders
Achrazoglou, John
07w110
07w151Summer99
Deleted Items (6)
Drafts (3)
Inbox (124)
Junk E-mail [4]
Outbox
Portflio
Sent Items
Sent Items1
syllabi
Look for:
Search In
Inbox
Inbox
Subject
07B:201 ePortfolio info.
RE: Eportfolio
Re: [SECONDARY-TEACH-ED] First ISEA Meeting of the Semester
General Expense Budget
[COE-INTERNAL] Graduate Student Recognition Week
[CITL] apology for accidental spam
[CITL] Account Information
Re: Music Education web site
FW: Isabel Bloom
Upgrade Friday morning (2/24)
[UI-NEWS] University of Iowa News Digest
FW: Summers Steps Down as Harvard President
RE: New URL for art education under Iowa A-Z
RE: New URL for art education under Iowa A-Z

PRINCIPLE THREE
Simple and Intuitive Use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

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PRINCIPLE FOUR
Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Closed captioning of text as it is spoken.

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PRINCIPLE FIVE
Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

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PRINCIPLE SIX
Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue.

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PRINCIPLE SEVEN
Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

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Universal Design for Learning

Design of *flexible* instructional *materials* and *activities* that allow the learning goals to be achievable by those with differences in their abilities and learning styles.

Universal Design for Learning

Universal Design for Learning

Flexibility built into the design of the curriculum and materials not added afterwards.

Universal Design for Learning

Rethinking and guiding

- Goals
- Methods
- Materials
- Assessments

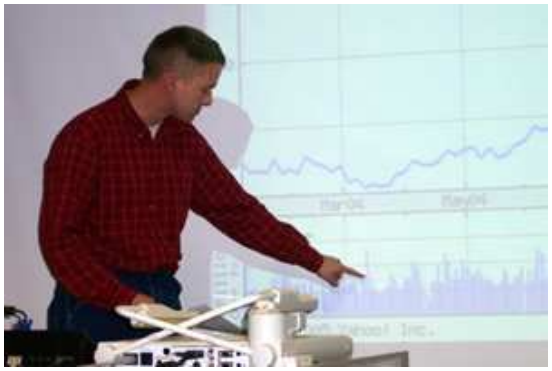
Universal Design for Learning

Multiple means of:

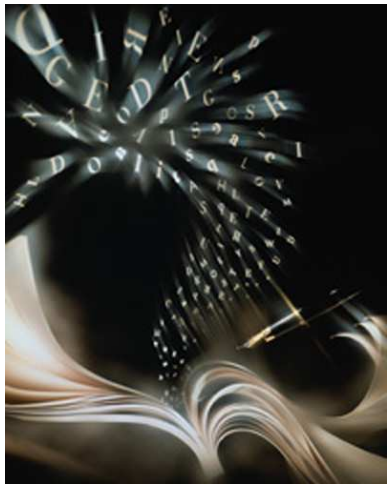
- Representation
- Expression
- Engagement

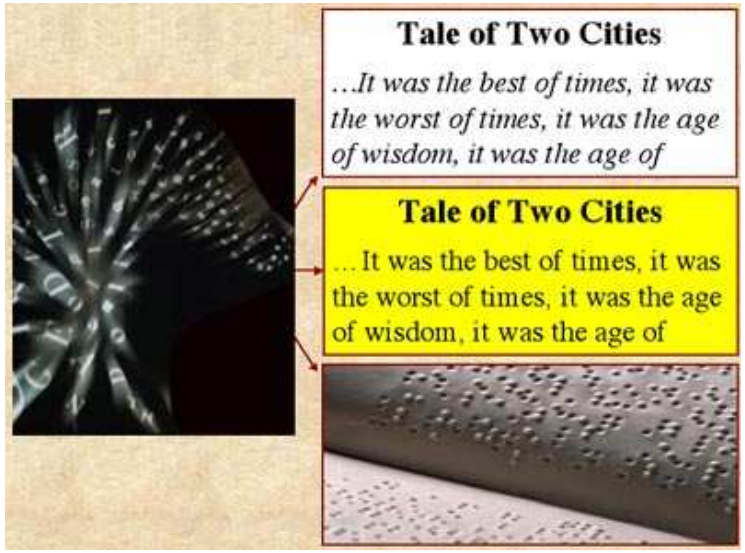
Universal Design for Learning

Multiple methods and assessments



Digital Text





- Can be
  - Enlarged
  - Spoken
  - Colored
  - Highlighted
  - Embossed to Braille
  - Supplemented with supports

Digital Books

Libraries, Magazines, Newspapers

- *Digital Book Libraries* (over 90 sites listed)
  http://www.ditext.com/etexts.html
- *Internet Public Library*
  http://www.ipl.org/
- *Project Gutenberg*
  http://promo.net/pg/
- *University of Virginia's e-Book Library*
  http://etext.lib.virginia.edu/ebooks/ebooklist.html

Universal design vs. Assistive technology

Universal design

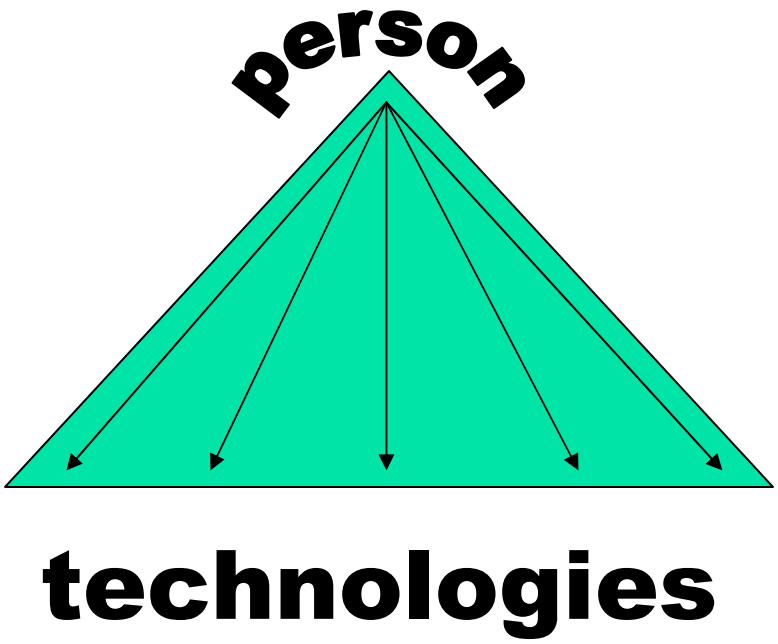
The design of products and *environments* to be usable by all people, to the greatest extent possible, without adaptation or specialized design.

Assistive technology

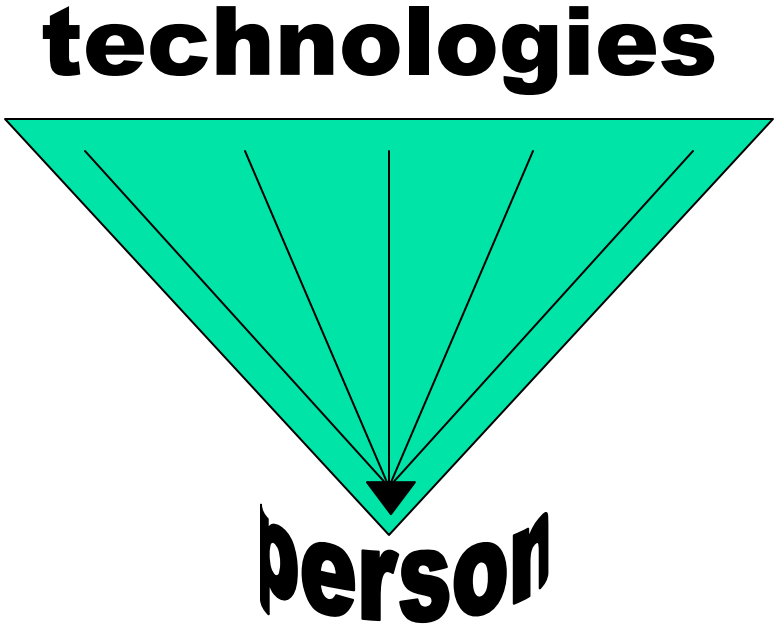
Any item, piece of equipment, that is used to maintain or improve functional capabilities of *individuals* with disabilities.

Universal design vs. Assistive technology

Assistive technology



Universal design



Research

Component Display Theory, (Merrill, 1983)

Multiple Learning Styles and Technology (Rockman *et al, 1996)*

Using Technology to Individualize Reading Instruction (Rose & Dalton, 2002)

Los Angeles Scientific Evaluation 2004 (Boster, 2004)

Research

Neuroscience – Brain Research

Three brain networks

1. *Recognition*
   Identifying and categorizing
2. *Strategic*
   Planning and performing
3. *Affective*
   Engagement and motivation

(Vygotsky, 1962) (Rose, 2000) Center for Applied Special Technology (CAST)

Research

Iowa Text Reader Project 2004-2005

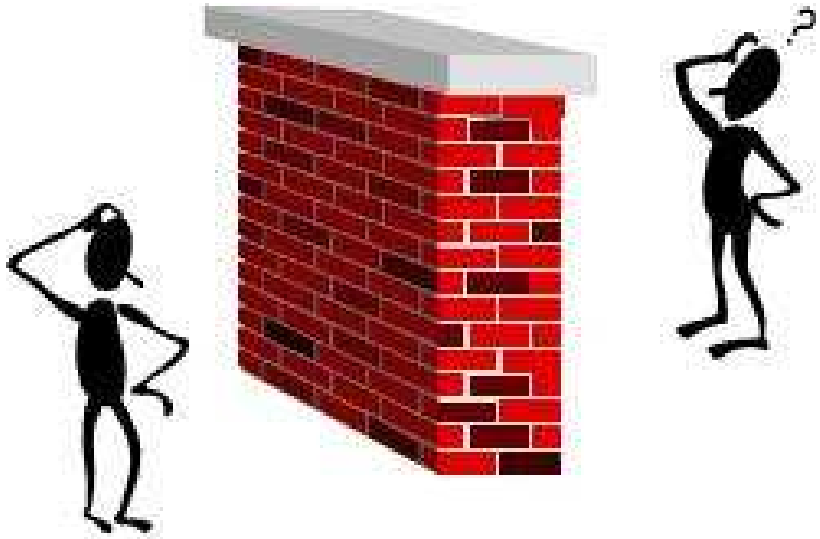
Iowa Assistive Technology Liaison, 2005

Using a text reader with "embedded study skills" brought:

- Better than expected improvement in reading rates.
- Positive correlations between the level of implementation and reading fluency and comprehension.
- Strong positive feelings by students and teachers.

Issues and Barriers

- Awareness and training
- Costs
- Effort and time
- The future?



References

ICATER – Iowa Center for Assistive Technology and Education Research
http://www.education.uiowa.edu/icater/

Iowa Program for Assistive Technology (IPAT)
http://www.uiowa.edu/infotech/

CAST (Center for Applied Special Technology)
http://www.cast.org/

Iowa COMPASS
http://www.medicine.uiowa.edu/iowacompass/

Family Center on Technology and Disability
http://www.fctd.info/

WestEd's Regional Technology in Education Consortium (RTEC)
http://www.wested.org

DO-IT (Disabilities, Opportunities, Internetworking, and Technology)
http://www.washington.edu/doit/

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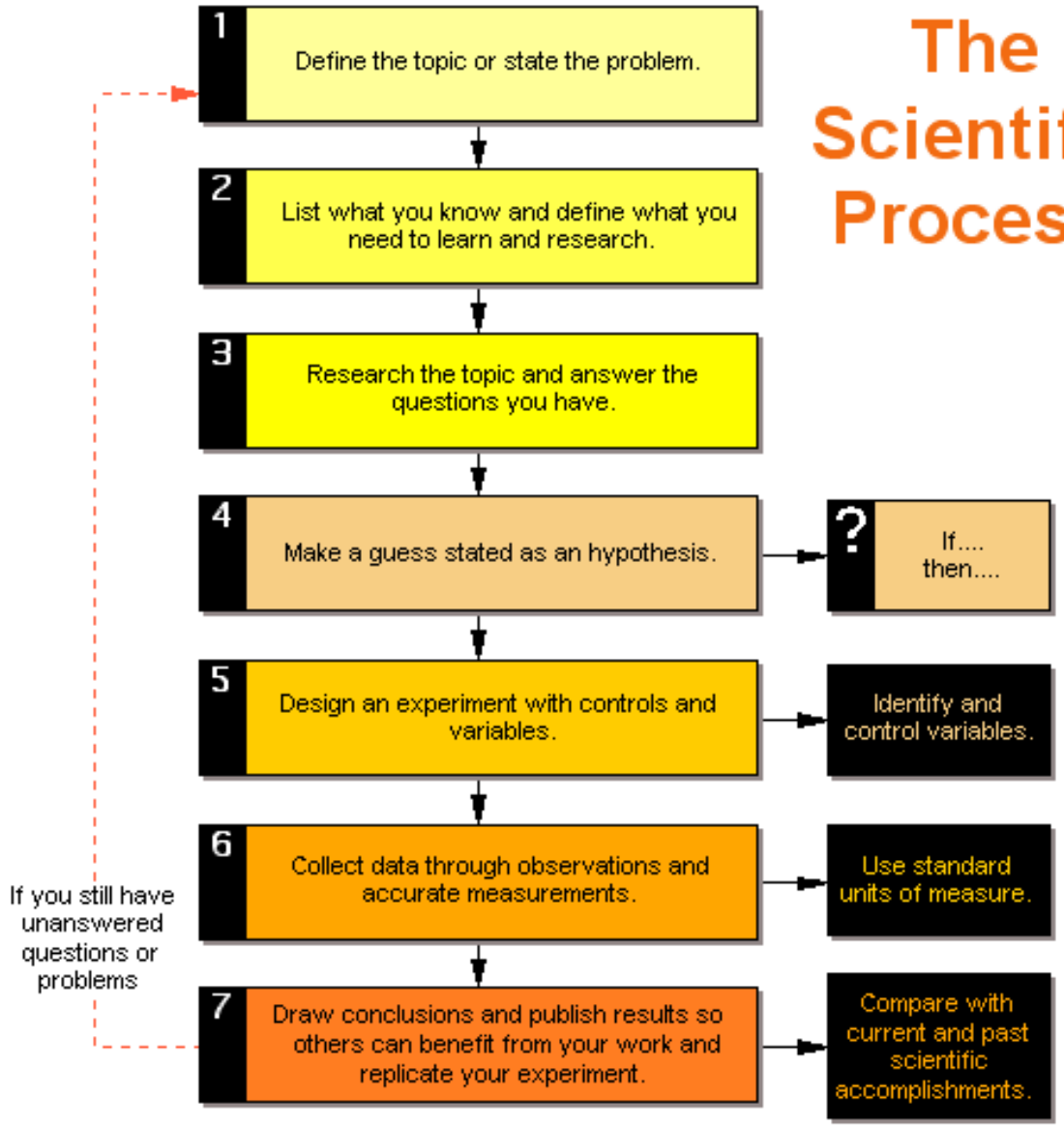
The Scientific Process